



## WORK PACKAGE AGREEMENT

<b>1. PROJECT/TASK/RTOP</b> Advanced Concepts and Technology Innovations			
<b>4. WORK PACKAGE TITLE</b> Small hopping rovers for planetary exploration		<b>5. ACCOUNT CODE</b> 233-0NM61-0-3450	
<b>6. WORK PACKAGE LEADER</b> S. Hayati _____ APPROVAL	<b>7. RESPONSIBLE SECTION MANAGER</b> D. Eisenman _____ APPROVAL	<b>8. PROJECT/TASK/RTOP MANAGER</b> N. Marswell _____ APPROVAL	
<b>9. WORK PACKAGE OBJECTIVES</b> LRSR FY 98 work consists of six subtasks listed below: 1- Design a new hopper rover for planetary exploration Develop a concept prototype and evaluate its mobility capability			
<b>10. DESCRIPTION OF WORK PACKAGE RESPONSIBILITIES AND APPROACH/ACTIVITIES</b>  This task addresses the development of the proof of concept for a planetary micro-rover capable of crawling and hopping on different terrain types. This task will deliver the prototype of a mobility system, with minimal autonomy, that will demonstrate basic crawling and hopping gaits.  <b>Our longer term object is to develop small lightweight hoppers that can be effective as mobility platforms on planetary surfaces as well as small bodies. For small bodies such hopper can provide very effective mobility system, since the hopper can traverse long distances with very must be developed to reliably and autonomously (due</b>  The task will span 6 months, from July to December inclusive, and will be organized as follows. <b>July</b> will be dedicated to an analysis of the current state of the art in legged locomotion, with particular emphasis to mechanism with hopping capabilities. A detailed trade-off analysis will be carried out, to produce a preliminary set of system requirements. During the month of <b>August</b> , the preliminary system design will be carried out, the requirements will be firmed up and further trade-off studies on micro-rover mass, size, energy storage and consumption, and payload <b>September</b> will be dedicated to the detailed design of the prototype and to start the fabrication of the mechanical components. It is envisioned that this will be an iterative process lasting through the month of <b>October</b> . In parallel, the design and fabrication of a basic electronic package will be carried out. The months of <b>November</b> and <b>December</b> will be dedicated to the integration and testing of the prototype, with a suitable demonstration planned for the			
<b>11. Work Package Inputs/Outputs</b>  Mobility Prototype  Advanced Concepts and Technology Innovations Advanced Concepts and Technology Innovations			



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<b>12. WORK PACKAGE PERIOD OF PERFORMANCE</b> July1, ,1998-October 10, 1988	<b>13. COST/WORK FORCE</b> <input type="checkbox"/> ALLOCATION      OR <input type="checkbox"/> SUMMARY <b>COST: \$100K</b> <input type="checkbox"/> CURRENT FY      OR <input type="checkbox"/> TOTAL <b>JPL WY: 0.5</b>		
<b>14. WORK PACKAGE ASSUMPTIONS / RESERVES / UNCERTAINTY ESTIMATES</b> The deliverables stated here are contingent upon the full funding as requested <ul style="list-style-type: none"><li>• Trade-off analysis of mobility solutions for crawling and hopping, including their effects on other</li><li>• The detailed design of the mobility system</li><li>• A mobility system prototype</li></ul>			
<b>15. SRM DETAILED BACKUP INFORMATION</b>  The workforce is as follows: <ul style="list-style-type: none"><li>• Samad Hayati (345)      10%</li><li>• Paolo Fiorini (345)      30%</li><li>• Summer Student (353)      100%</li></ul>			
<b>16. INDEX OF ATTACHMENTS</b> <input type="checkbox"/> SCHEDULE <input type="checkbox"/> WORK FORCE LOADING <input type="checkbox"/> COST ESTIMATE/RACR:      REVISION NO. _____      DATED _____      2 <input type="checkbox"/> OTHER			<b>PAGE</b>
<b>17. WORK PACKAGE DISTRIBUTION</b> Jan Smith			